

Sicheng Ouyang

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Education

University of Waterloo, Waterloo, ON Sep 2025 – Present
Bachelor of Software Engineering, Expected Apr 2030
Competitive Programming: USACO Gold Division (2024) · CCC Junior Distinction (2024)

Skills

Languages: Python, TypeScript, JavaScript, Java, C++, SQL
Frameworks & Libraries: FastAPI, React, Next.js, PyTorch
Data & Infrastructure: PostgreSQL, PostGIS, MySQL, Redis, Supabase, Docker, Linux, GitHub Actions

Experience

Mui Scientific SQL · REST APIs · ERP Integrations · Next.js May 2026 – Aug 2026
Software Engineer Mississauga, ON

- Automated batch ERP-to-inventory synchronization with vendor REST APIs, custom parsers, and SQL workflows, enabling traceability across **10,000+** serial/batch records and cutting audit preparation from **8 hours** to **30 minutes**.
- Implemented validation rules and mismatch alerts in third-party inventory tooling, reducing routine manual checks across procurement, warehouse, and sales records by roughly **80%**.
- Modernized **30+** corporate pages with typed Next.js templates and a script/HMAC-secured content API, enabling staff to schedule notices while achieving a **95+** Lighthouse performance score.

KnowYi Technology Inc. FastAPI · Next.js · OpenAI API · SQLAlchemy Apr 2025 – May 2025
Software Engineer, Founding Team Waterloo, ON

- Automated BOM extraction for batches of up to **200** spreadsheet and CAD files using format-specific parsers, candidate generation, and OpenAI-assisted parsing, cutting test processing time by **80%** while preserving source-linked rows.
- Built one-click supplier research by crawling sitemaps, extracting contacts with BeautifulSoup, and structuring findings with OpenAI, returning reports in under **15 seconds**.

Tencent Music Entertainment Group Python · Speech Synthesis · Audio ML Jul 2024 – Aug 2024
Machine Learning Engineer Shenzhen, China

- Evaluated 10 speech-generation models across 20+ controlled experiments using standardized Mel-spectrogram and F0 preprocessing, eliminating underperforming combinations and selecting the final singing-voice generation model.
- Optimized inference and vocal-simulation parameters through iterative tuning, raising an internal speaker consistency metric by 20% and MOS from **3.43** to **3.63**.

Advanced A-Level Study Website WordPress · PHP · MySQL · Tencent Cloud Sep 2023 – Aug 2025
Co-Founder & Lead Developer Wuhan, China

- Co-founded and operated an A-Level learning platform by leading WordPress/PHP development, MySQL operations, and Tencent Cloud deployment, reaching **1,000+** peak daily visitors and supporting **200+** students.

Projects

The Cobalt Guide Next.js · TypeScript · Supabase/PostGIS · MapLibre · Redis [Demo](#) [GitHub](#)

- Engineered viewport-bounded search across **58,559** locations with PostGIS GiST indexes and MapLibre clustering, reaching CDN-warm p95 latency of **65 ms** for maps and **45 ms** for search in 30-sample production benchmarks.
- Hardened the backend with transactional PostgreSQL RPCs, Supabase RLS, and Redis fallbacks to provide atomic updates, row-level authorization, and graceful cache degradation; verified by **270+** Vitest tests and live database/Playwright suites.

Real-Time Chat Platform FastAPI · Next.js · WebSocket · PostgreSQL [GitHub](#)

- Implemented cursor-based message recovery with PostgreSQL before_id and since_id queries, enabling reconnecting clients to retrieve persisted messages missed during disconnections.
- Secured real-time delivery with JWT-authenticated WebSockets, conversation membership checks, per-user connection caps, and rate limits, blocking unverified and unauthorized clients.

Neural Network Playground FastAPI · PyTorch · React Flow · Recharts [Demo](#) [GitHub](#)

- Converted React Flow JSON graphs into dynamic PyTorch models through FastAPI, validating layer order, dimensions, and activations before training across **five** datasets.
- Implemented cursor-based REST polling for incremental epoch metrics and rendered updates with Recharts every 1.5 seconds, enabling live monitoring and pause, resume, and stop controls.